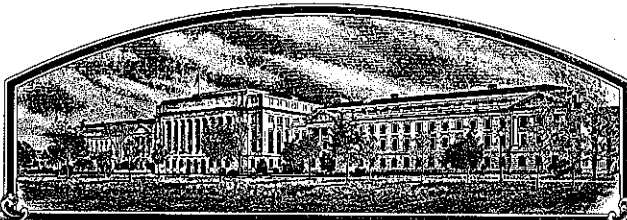


No.

9500022



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*Resource Seeds, Inc.*

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

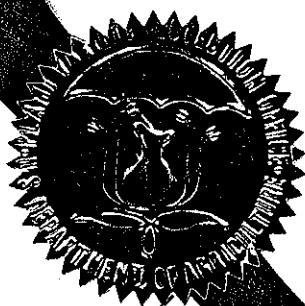
NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE IDENTIFIED BY THE VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF SEEDS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'RSI 5'

*In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of July in the year of our Lord one thousand nine hundred and ninety-seven.*

Attest:



*Martha C. Stanton*  
Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

*Sam Ichikawa*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE DIVISIONAPPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE  
(INSTRUCTIONS ON REVERSE)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) <b>Resource Seeds, Inc.</b>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. <b>RSI 105</b>		3. VARIETY NAME <b>RSI 5</b>	
4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) <b>P.O. Box 1319 Gilroy, CA 95021</b>		5. PHONE (include area code) <b>408-847-1051</b>		FOR OFFICIAL USE ONLY PVPO NUMBER <b>9500022</b>	
6. GENUS AND SPECIES NAME <b>Triticum aestivum Lin.</b>		7. FAMILY NAME (Botanical) <b>Gramineae</b>		Filing and Examination Fee: \$ <b>2,325.00</b> Date <b>Oct. 27, 1994</b>	
8. CROP KIND NAME (Common Name) <b>Common</b>		9. DATE OF DETERMINATION <b>1992</b>		Certificate Fee: \$ <b>300.00</b> Date <b>June 15, 1997</b>	
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) <b>Corporation</b>				Filing and Examination Fee: \$ <b>2,325.00</b> Date <b>Oct. 27, 1994</b>	
11. IF INCORPORATED, GIVE STATE OF INCORPORATION <b>California</b>		12. DATE OF INCORPORATION <b>1990</b>		Certificate Fee: \$ <b>300.00</b> Date <b>June 15, 1997</b>	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS <b>Dr. George Fohner Resource Seeds, Inc. P.O. Box 1319 Gilroy, CA 95021</b>					

PHONE (include area code): **408-847-1051**

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)	
a. <input checked="" type="checkbox"/> Exhibit A, Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B, Novelty Statement c. <input checked="" type="checkbox"/> Exhibit C, Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D, Additional Description of Variety e. <input checked="" type="checkbox"/> Exhibit E, Statement of the Basis of Applicant's Ownership f. <input checked="" type="checkbox"/> Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office <u>10/20/94</u> g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,325) made payable to "Treasurer of the United States"	
15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "YES," answer items 16 and 17 below) <input type="checkbox"/> NO (If "NO," skip to item 18 below)	
16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED
18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? <input type="checkbox"/> YES (If "YES," through <input type="checkbox"/> Plant Variety Protection Act <input type="checkbox"/> Patent Act. Give date: _____) <input checked="" type="checkbox"/> NO	
19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> YES (If "YES," GIVE NAMES OF COUNTRIES AND DATES) _____ <input checked="" type="checkbox"/> NO	
20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.	

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.


SIGNATURE OF APPLICANT [Owner(s)] 	CAPACITY OR TITLE <b>President</b>	DATE <b>10/18/94</b>
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

Exhibit A  
RSI 5

ORIGIN AND BREEDING HISTORY

RSI 5 is the result of hybridization, individual plant selection, and bulk selection from the cross Tadinia/ Probrand 775//VS73.600/MRL'S'/3/ BOW'S'//YR/TRF'S' (CIMMYT 4 BYDV14). The experimental designation was 91S12605. The wheat variety Tadinia is a release from the University of California, while the wheat variety Probrand 775 is a release from Northrup King Company. The wheat line VS73.600/MRL'S'/3/ BOW'S'//YR/TRF'S' (CIMMYT 4 BYDV14) was line number four in CIMMYT's Fourteenth Barley Yellow Dwarf Virus Screening Nursery.

We made the first cross in the field at Rio Vista, California in the spring, 1988. The  $F_1$  was grown at Gonzales, California in summer, 1988, whereupon a top cross was made. The  $F_1$  top was planted at Woodland, California in fall, 1988. Individual plant selections were made in spring, 1989 which were subsequently planted in Gonzales, California in the summer, 1989.  $F_2$  plant selections made at Gonzales were moved to Woodland for fall planting in 1989.  $F_3$  individual plant selections were made from the planting in 1990. These selections were moved to the central coast region of California, this time near the town of Hollister. In October, 1990 a single  $F_4$  progeny row number 41454, was bulk harvested to provide seed for preliminary yield trials in 1991. Preliminary trial plot number 12605 gave the experimental designation 91S12605 to this new wheat line. In addition to the trial plots, a paired row purification plot was also planted. The purification rows were rogued for variants to create a uniform plant population. It was this seed source that was used for additional testing and a breeder seed increase in 1992.

We have noted during reproduction and multiplication of RSI 5 in the Sacramento Valley environment, that some taller and/or earlier variants occur at a frequency between 0.5-1.0%. Additionally, there can be up to 0.6% white kernels.

On the basis of our experience producing  $F_5$  (PreBreeder),  $F_6$  (Breeder), and  $F_7$  (Foundation) generation seed increases of RSI 5, the variety appears to be uniform and stable.

Exhibit A - RSI 5

ORIGIN AND BREEDING HISTORY

Page 2

RSI 5 appears to be well adapted to the irrigated wheat growing areas of the Sacramento and San Joaquin Valleys. (Figure 1 & Table 7)

We expect to maintain breeders seed as pure line increases from this lot.

9500022

Exhibit B  
RSI 5

NOVELTY STATEMENT

RSI 5 differs from all presently grown varieties in the Sacramento Valley, its area of best adaptation, by exhibiting a markedly higher 1000 kernel weight. (Table B1) It is most similar to the variety Express, but is significantly different from Express in height (Table B2) and grain protein (Table B3). On average, RSI 5 is two inches taller than Express, and has 2% lower grain protein.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
COMMODITIES SCIENTIFIC SUPPORT DIVISION  
BELTSVILLE, MARYLAND 20708

EXHIBIT C  
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY  
WHEAT (TRITICUM SPP.)

INSTRUCTIONS: See Reverse.

NAME OF APPLICANT(S)

Resource Seeds, Inc.

ADDRESS (Street and No. or R.F.D. No., City, State, and ZIP Code)

P.O. Box 1319  
Gilroy, CA 95021

FOR OFFICIAL USE ONLY

PVPO NUMBER

9500022

VARIETY NAME OR TEMPORARY  
DESIGNATION

Place the appropriate number that describes the varietal character of this variety in the boxes below.  
Place a zero in first box (e.g.,  or ) when number is either 99 or less or 9 or less.

## 1. KIND:

☒ 1 = COMMON    2 = DURUM    3 = EMMER    4 = SPELT    5 = POLISH    6 = POULARD    7 = CLUB

## 2. TYPE:

1 = SPRING    2 = WINTER    3 = OTHER (Specify) \_\_\_\_\_  1 = SOFT    2 = HARD    3 = OTHER (Specify) \_\_\_\_\_

1 = WHITE    2 = RED    3 = OTHER (Specify) \_\_\_\_\_

## 3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:

FIRST FLOWERING     LAST FLOWERING

## 4. MATURITY (50% Flowering):

NO. OF DAYS EARLIER THAN .....  1 = ARTHUR    2 = SCOUT    3 = CHRIS    7 = Yolo  
 NO. OF DAYS LATER THAN .....  4 = LEMHI    5 = NUGAINES    6 = LEEDS    8 = Klasic

## 5. PLANT HEIGHT (From soil level to top of head):

CM. HIGH    7 = Yolo    8 = Tadinia  
 CM. TALLER THAN .....   
 CM. SHORTER THAN .....  1 = ARTHUR    2 = SCOUT    3 = CHRIS  
4 = LEMHI    5 = NUGAINES    6 = LEEDS

## 6. PLANT COLOR AT BOOTING (See reverse):

1 = YELLOW GREEN    2 = GREEN    3 = BLUE GREEN

## 7. ANTHOR COLOR:

1 = YELLOW    2 = PURPLE

## 8. STEM:

Anthocyanin: 1 = ABSENT    2 = PRESENT     Vaxy bloom: 1 = ABSENT    2 = PRESENT  
 Hairiness of last internode of rachis: 1 = ABSENT    2 = PRESENT     Internodes: 1 = HOLLOW    2 = SOLID  
 NO. OF NODES (Originating from node above ground)     CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

## 9. AURICLES:

Anthocyanin: 1 = ABSENT    2 = PRESENT     Hairiness: 1 = ABSENT    2 = PRESENT

## 10. LEAF:

Flag leaf at booting stage: 1 = ERECT    2 = RECURVED    3 = OTHER (Specify): 2 also     Flag leaf: 1 = NOT TWISTED    2 = TWISTED  
Heterogeneity  
 Hairs of first leaf sheath: 1 = ABSENT    2 = PRESENT     Vaxy bloom of flag leaf sheath: 1 = ABSENT    2 = PRESENT  
 MM. LEAF WIDTH (First leaf below flag leaf)     CM. LEAF LENGTH (First leaf below flag leaf)

## 11. HEAD:

☐ 1 Density: 1 = LAX 2 = DENSE
 ☐ 4 Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE  
 4 = OTHER (Specify) Oblong

☐ 4 Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

☐ 1 Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED  
 5 = BROWN 6 = BLACK 7 = OTHER (Specify): \_\_\_\_\_

☐ 1 ☐ 3 CM. LENGTH ☐ 1 ☐ 7 MM. WIDTH

## 12. GLUMES AT MATURITY:

☐ 3 Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)  
 3 = LONG (CA. 9 mm.)
 ☐ 2 Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)  
 3 = WIDE (CA. 4 mm.)

☐ 2 Shoulder: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED  
 shape: 4 = SQUARE 5 = ELEVATED 6 = APICULATE
 ☐ 3 Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

## 13. COLEOPTILE COLOR:

☐ 1 1 = WHITE 2 = RED 3 = PURPLE

## 14. SEEDLING ANTHOCYANIN:

☐ 1 = ABSENT 2 = PRESENT

## 15. JUVENILE PLANT GROWTH HABIT:

☐ 3 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

## 16. SEED:

☐ 1 Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL
 ☐ 1 Check: 1 = ROUNDED 2 = ANGULAR

☐ 2 Brush: 1 = SHORT 2 = MEDIUM 3 = LONG
 ☐ 1 Brush: 1 = NOT COLLARED 2 = COLLARED

☐ Phenol reaction 1 = IVORY 2 = FAWN 3 = LT. BROWN  
 (See instructions): 4 = BROWN 5 = BLACK

☐ 3 Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) \_\_\_\_\_

☐ 0 ☐ 7 MM. LENGTH ☐ 0 ☐ 4 MM. WIDTH ☐ 4 ☐ 8 GM. PER 1000 SEEDS

## 17. SEED CREASE:

☐ Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'  
 2 = 80% OR LESS OF KERNEL 'CHRIS'  
 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

☐ Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'  
 2 = 35% OR LESS OF KERNEL 'CHRIS'  
 3 = 50% OR LESS OF KERNEL 'LEMHI'

## 18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 STEM RUST (Races) ☐ 2 LEAF RUST (Races) ☐ 2 STRIPE RUST (Races) ☐ 0 LOOSE SMUT

☐ 0 POWDERY MILDEW ☐ 0 BUNT ☐ 2 OTHER (Specify) Septoria tritici blotch

## 19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

☐ 0 SAWFLY ☐ 0 APHID (Bydv.) ☐ GREEN BUG ☐ CEREAL LEAF BEETLE

☐ OTHER (Specify) \_\_\_\_\_ HESSIAN FLY RACES:
 ☐ GP ☐ A ☐ B ☐ C  
☐ D ☐ E ☐ F ☐ G

## 20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Express	Seed size	
Leaf size		Seed shape	
Leaf color		Coleoptile elongation	
Leaf carriage		Seedling pigmentation	

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

- (a) L.W. Briggie and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
- (b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

## Exhibit D

ADDITIONAL DESCRIPTION OF THE VARIETY

RSI 5 is a cultivar of Triticum aestivum LIN. with spring growth habit. The kernels are free-threshing, red, mid-long and ovate. Kernel size is about 7mm long and 4mm wide. The germ is medium size. The cheeks are rounded with a shallow, narrow crease. The brush is large and not collared.

The spike is awned, oblong and lax. Head length is typically 13cm long and 17mm wide. Glumes are white to amber, somewhat glabrous, long and mid-wide. Shoulders are oblique. Beaks are acuminate.

The coleoptile color is white, and juvenile growth habit is erect. Plant color at booting is green whereas the color of both the varieties Yolo and Express is yellow-green. No waxy bloom is present on the stem and flag sheath. Leaf blades and sheath are glabrous. The auricles are pubescent and have anthocyanin. The stem is hollow.

The last rachis internode is pubescent. Some plants have erect flag leaves at booting while others are recurved. Both types are twisted. Anther color is yellow.

RSI 5 is probably a single gene dwarf being about 1 inch shorter than one of its parents, Tadinia, but taller than Yolo and Express by about 1 inch and 2 inch respectively. RSI 5 has good tolerance to Septoria tritici blotch, Septoria tritici. Rob, ex Desm, and leaf rust, Puccinia recondita Rob ex Desm prevalent in California in 1993 and 1994. Its 1000 kernel weight is notably higher than presently grown competing varieties.

RSI 5 is well adapted to the wheat growing areas of the Sacramento Valley.

Table B1 Thousand Kernel Weight of RSI 5 & Other Varieties

	RSI 5	Anza	Yolo	Express	Tadinia
Butte Co.	GRAMS				
1993	49.6	33.8	32.6	41.8	34.0
1994	44.0	33.7	34.7	42.8	40.0
Colusa Co.					
1995	50.4	34.8	31.6	36.3	NA
Yolo Co. (UCD)					
1993	52.2	31.4	32.2	42.8	37.3
1994	50.7	33.8	35.7	42.3	39.8
1995	47.8	33.2	31.0	39.4	NA
Sutter Co.					
1993	44.8	33.8	31.4	41.7	31.3
1994	45.3	35.4	33.3	42.0	38.0
1995	44.3	39.0	34.4	37.5	NA
Sacramento Co. (Delta)					
1993	55.1	37.0	36.5	44.3	44.5
1994	52.8	41.3	39.8	44.2	42.3
1995	52.4	38.7	37.9	44.0	NA
AVG	49.1	35.5	34.3	41.6	38.4

Paired "t" test comparing 1000 kernel wt of RSI 5 vs Other variety:

"t" value	11.1	14.8	7.3	7.9
Probability Level, p<	0.001	0.001	0.001	0.001

Source: University of California, Agronomy Progress Reports Nos. 236, 244, & 249

9500022

Table B2 Plant Height of RSI 5 vs Express

	RSI 5	Express
Butte Co.	(INCHES)	
1993	43	38
1994	44	42
Colusa Co.		
1995	39	37
Yolo Co. (UCD)		
1993	40	40
1994	39	39
1995	41	40
Sutter Co.		
1993	38	35
1994	43	42
1995	NA	NA
Sacramento Co. (Delta)		
1993	44	41
1994	40	38
1995	NA	NA
AVG	41	39

Paired "t" test       $t = 3.94$   
 $p < 0.01$

Source: University of California,  
 Agronomy Progress Reports Nos. 236, 244, & 249

Table B3 Grain Protein of RSI 5 vs Express

	RSI 5	Express
Butte Co.	% Protein at 12% moisture basis	
1993	10.1	12.7
1994	10.5	12.3
Colusa Co.		
1995	11.9	13.3
Yolo Co. (UCD)		
1993	10.6	13.3
1994	11.5	13.6
1995	11.7	13.7
Sutter Co.		
1993	NA	NA
1994	12.4	13.2
1995	10.4	13.0
Sacramento Co. (Delta)		
1993	9.7	10.6
1994	8.3	10.9
1995	NA	NA
AVG	10.7	12.7

Paired "t" test       $t = 8.62$   
 $p < 0.001$

Source: University of California,  
 Agronomy Progress Reports Nos. 236, 244, & 249

EXHIBIT E  
RSI 5 WHEAT

STATEMENT OF THE BASIS OF APPLICANT'S OWNERSHIP

RSI 5, the variety for which Plant Variety Protection is hereby sought, was developed by Dr. Robert W. Matchett, an employee of Resource Seeds, Inc., to which all rights to the variety are assigned.